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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Amendment of Part 15 of the	)	
Commission's Rules to Permit Operation	)	
Of Biomedical Telemetry Devices on	)	ET Docket No. 95-177
VHF TV Channels 7-13 and on	)	
UHF TV Channels	)	

NATIONAL ASSOCIATION OF BROADCASTERS
PETITION FOR PARTIAL RECONSIDERATION

On October 20, 1997, the Commission released its *Report and Order*[1] in the above-captioned proceeding. In this rule making the agency has amended Part 15 of its rules to increase the spectrum use and operating power of unlicensed biomedical telemetry devices. These devices would employ the same frequencies as certain VHF and UHF television stations, and operate in health care facilities.

The National Association of Broadcasters ("NAB")[2] submitted comments in response to the agency's *Notice of Proposed Rule Making*[3] in this proceeding.[4] In these comments we cautioned the Commission regarding the interference potential of such biomedical telemetry devices operating on television broadcast frequencies. In today's Petition for Partial Reconsideration, filed pursuant to Section 1.429 of the Commission's Rules, we urge revision to the "separations criteria" aspects of its *Report and Order*.

[1] *Report and Order* in ET Docket No. 95-177 (Report and Order) ____FCC Rcd_____ (1997). 62 Fed. Reg. 58656 (October 30, 1997).
[2] NAB is a nonprofit, incorporated association of television and radio stations and networks which serves and represents the American broadcast industry.
[3] *Notice of Proposed Rule Making* in ET Docket No. 95-177, 11 Fcc Rcd 1063 (1996).
[4] Comments of NAB in ET Docket No. 95-177, filed April 16, 1997.

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The separation criteria adopted by the Commission in the *Report and Order* in this proceeding do not ensure that television broadcast signals will be adequately protected from Part 15 biomedical telemetry transmissions. These criteria are less protective of television signals than the existing 50 dB desired-to-undesired (D/U) protection ratio established for land mobile transmissions operating under Part 90 of the Commission's rules.[5] They are also far less protective of television signals than recent test data produced by the Advanced Television Technology Center would indicate is necessary.

In our comments in this proceeding, we argued that "given the lack of objective technical data in the record of the instant proceeding, it is not clear that the [proposed] separations are appropriate for UHF channels ... or for VHF use outside of hospital structures."[6] At the time of filing, this was the case. However, subsequent to the closure of the reply comment deadline in this proceeding, the Advanced Television Technology Center (ATTC) published a report describing the results of tests that were conducted to determine the sensitivity of NTSC signals to noise-like interferors as a function of frequency across the NTSC channel.[7] These test results show that the D/U protection ratio established by the Commission in this proceeding for protecting NTSC television signals from biomedical telemetry devices is inadequate. In particular, the ATTC test results show that an NTSC television signal to co-channel noise-like interferor D/U ratio of 56.99 dB is necessary to provide adequate protection to NTSC television service areas.[8]

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[5] See 47 CFR Section 90.309.
[6] NAB comments at 10.
[7] *Results of RF Mask Test*, Advanced Television Technology Center, June 13, 1996 (ATTC report). This report is attached to this petition as Appendix A.
[8] See results of ATTC Test Number 301 reported in Table 1 of the ATTC report.

In light of this new evidence we ask the Commission to reconsider its decision in the *Report and Order* in this proceeding and, in particular, that new separation distance criteria be established for protecting NTSC television signals from the transmissions of Part 15 biomedical telemetry devices. These new separation distance requirements should be based on a 57 dB NTSC to biomedical telemetry D/U ratio.

Respectfully submitted,

NATIONAL ASSOCIATION OF
BROADCASTERS

Henry L. Baumann
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December 1, 1997

APPENDIX A

Results of RF Mask Test

by

Advanced Television Technology Center

June 13, 1996

Results of RF Mask Test

Introduction

This test was devised to determine the sensitivity of an NTSC signal to a noise-like interferor, as a function of frequency across the channel. The results may be used to design an RF Mask to describe the out-of-channel emission limits for an ATV transmitter operating on a channel adjacent to an NTSC signal.

The testing was undertaken by ATTC at the request of the FCC Advisory Committee. The experimental procedure, as approved by the System Subcommittee's Working Party on System Evaluation and Testing (SS/WP-2), is documented in SSWP2-1463 (25 July 95), a copy of which is appended to this report.

The procedure used bandpass filtered, Gaussian-distributed random noise to simulate an ATV signal, rather than an actual ATV transmitter. Although it is supplemental to the testing of the Grand Alliance system, this test did not involve the use of the Grand Alliance system hardware.

Method

The test was conducted using Channel 12 (204-210 MHz) as the Desired channel. The nominal power level of the Desired NTSC signal was -35 dBm (Moderate level). A block diagram of the test setup is provided in Figure 1.

For each of twelve frequencies, from 203.75 MHz to 209.41 MHz, the Threshold of Visibility (TOV) was determined for narrow-band noise centered at that frequency. (Refer to Table 1.) Two identical band-pass filters were cascaded to achieve the desired response. The frequency response of a single filter is plotted in Figure 2 of the appended test procedure. The response of the cascaded filters is plotted in Figure 2 of this report. The 3-dB bandwidth of the cascaded noise filters was 0.524 MHz.

The image used was M14 ("Texas Sign Dude"), the one routinely used in tests of interference into NTSC. For the highest three frequencies, which bracket the color subcarrier frequency, the TOV and CCIR 4 ("perceptible, but not annoying") impairment levels were also determined using a second image, S11 ("Woman with Roses"), which has more saturated color. The thresholds and CCIR 4 impairment levels were determined by a panel of three expert observers viewing a bank of 24 NTSC receivers, in accordance with the Grand Alliance System Test Procedures (SSWP2-1306, 24 March 95).

For each of four frequencies, bracketing the aural carrier frequency, the Threshold of Audibility (TOA) for impairment of BTSC stereo reception was determined by three expert observers listening directly to each of the 24 receivers. The same three sounds were used as in the stereo portion of the Degradation of BTSC Audio test of the Grand Alliance system. These selections, taken from the EBU Sound Quality Assessment Material (SQAM) CD, were "Glockenspiel", "Harpsichord", and "Male Speech".

Data

The results are presented in tabular and graphical form in Table 1 and Figure 3, respectively.* These data show the relative sensitivity to narrow-band noise as a function of frequency across an NTSC channel. The TOVs, TOAs, and CCIR 4 ratings are shown. For each measurement, the median value for the 24 receivers is given.

Appended to this report are tabulations of the receiver-by-receiver voting results at each frequency. These constitute the "raw" data from which the values in Table 1 and Figure 3 were calculated.

For comparison with the results for narrow-band noise, the threshold of visibility for random noise having a substantially flat spectrum (broadband) across the test channel is tabulated for each receiver in Table 2. Note that these data were obtained at the Strong (-25 dBm nominal) Desired power level.

In Figure 4, the results of the RF Mask Test are plotted relative to an upper-adjacent-channel ATV signal. The NTSC carrier levels used in the test are shown for reference: the Desired signal level of -35 dBm, measured at the peak of sync; and the aural carrier level 13 dB below the visual carrier level, as specified in the Grand Alliance Test Plan (Section 3.7.2) for a desired NTSC signal. The color subcarrier frequency (F_{SC}) is also shown for reference.

The test results plotted in Figure 4 are the actual Undesired signal levels obtained in the test. The worst-case (most sensitive) levels are plotted: the TOV data obtained using the "Texas Sign Dude" image for Tests #296-304; the TOV data using the more saturated "Woman with Roses" image for Tests #305-307, which bracketed the color subcarrier frequency; and the TOA data for Tests #308-311, which bracketed the aural carrier frequency.

The ATV spectrum shown in Figure 4 is based upon the assumptions of co-location and equivalent coverage and service area of the adjacent-channel ATV and NTSC signals. Calculation based upon early laboratory testing indicated that equivalent coverage could be obtained with an average ATV power 12 dB

*For the single case of Test #310, the data point obtained is inconclusive due to the likely adverse effect of the narrow-band noise filter roll-off characteristic. At the center frequency of 210.31 MHz, the ATV pilot carrier frequency, the filter response is only about 25 dB down at the aural carrier frequency of 209.75 MHz. Therefore, it should not be concluded that the ATV pilot would cause this level of interference to lower-adjacent-channel audio. Since this data point is inconclusive, it should not be used by spectrum planners.

below the peak power of the NTSC signal. This power ratio was then used in the Charlotte terrestrial field testing. In order to present the ATV spectrum on the correct scale relative to the test results, the ATV signal is plotted 10.6 dB below the -47 dBm average power level. (The ATV average power was based upon a 6-MHz bandwidth, while the noise used in the mask test had a 3-dB bandwidth of 524 kHz. The ratio of the noise power between these two bandwidths is 10.6 dB.) The adjacent-channel splatter shown in Figure 4 is a smoothed representation of the measured performance of the Charlotte Field Test transmitter, operating with a 6-dB power backoff. To generate this representation, the major features were identified by a series of points, and linear interpolation was performed between adjacent points. For reference, the original spectrum plot showing the unfiltered output of the field test transmitter is appended to this report.

The existing NTSC emission mask is specified in the Code of Federal Regulations, 47 CFR, Section 73.687, Paragraphs (a) (1) and (e) (1). The mask is plotted in Figure 4 relative to an assumed upper-adjacent-channel NTSC signal having a peak power of -35 dBm. The Code specifies that lower sideband emissions be at least 20 dB down at the channel edge (1.25 MHz below the visual carrier frequency), at least 42 dB down at the lower sideband frequency corresponding to modulation of the visual carrier by the color subcarrier (3.579545 MHz below the visual carrier frequency), and at least 60 dB down beyond 3 MHz below the channel edge.

The proposed ATV emission mask is specified in Paragraph 56 of the FCC Fifth Further Notice of Proposed Rule Making (NPRM), MM Docket No. 87-268, released May 20, 1996. This mask is plotted in Figure 4 relative to an upper-adjacent channel ATV signal having an average power of -47 dBm, as shown in the Figure. The NPRM specifies an attenuation of at least 35 dB at the channel edge and at least 60 dB more than 6 MHz from the channel edge. Between these two points, the mask is defined by a formula:

Attenuation in dB = $35 + [(\Delta f)^2 / 1.44]$, where
Δf = frequency difference in MHz from the channel edge.

Analysis

As expected, the visibility data follow the well-known "W-curve" for NTSC, with the greatest sensitivity to noise occurring approximately 1 MHz above the visual carrier frequency and at the color subcarrier frequency. Also as expected, the threshold of audibility is most sensitive at the aural carrier frequency.

The maximum visibility occurs 1 MHz away from the visual carrier frequency, rather than at the carrier frequency, due to the response of the video IF amplifier in the receiver. This response is made 6 dB down at the carrier frequency in order to equalize the sum of the responses of the sidebands in the vestigial sideband portion of the signal. The IF response approaches unity approximately 1.25 MHz away from the carrier frequency, above which only the upper sideband is present. At higher frequencies, the visibility is not limited by the receiver response, but by the response of the human vision system. The visibility reaches a second peak at the color subcarrier frequency, because noise near the subcarrier frequency is heterodyned down to low, more visible, frequencies.

Figure 4 shows audible interference from energy in the upper-adjacent channel (above 210 MHz). Although no quantitative conclusion should be drawn from the data point taken at the ATV pilot carrier frequency (see footnote on Page 2), it is known that the 4.5-MHz sound IF filters in typical TV receivers have substantial response in the upper-adjacent channel. The results of this testing are consistent with the results of the upper-adjacent-channel ATV-into-NTSC audio interference testing conducted using the Grand Alliance system, as documented in Section I-4 ("Degradation of BTSC Audio") of the Record of Test Results submitted to the FCC Advisory Committee. An analysis of these results is presented in Section I-15 ("Comments by Grand Alliance on Test Results"). This analysis includes graphs of typical TV receiver adjacent channel response characteristics. It concludes that the TV receiver response to adjacent channel interference, rather than the ATV out-of-band spectrum spillover, is the principal audio interfering mechanism.

It should be noted that intermodulation in the front end of an NTSC receiver can also generate (or regenerate) sideband splatter products. Even if the transmitter were ideal and did not produce any energy in the adjacent channels, the receiver could create such energy. Therefore, since both the transmitter and the receiver may be contributors to the splatter, a transmitter-only solution may not suffice.

Postscript

The readers of this report are encouraged to evaluate the proposed ATV emission mask, relative to the measured data, and with regard to its impact on their own implementation plans. It is hoped that this study will be of service to broadcasters and equipment manufacturers in formulating responses to the FCC NPRM, in the near term, and in refining their plans for implementing ATV service, in the longer term.

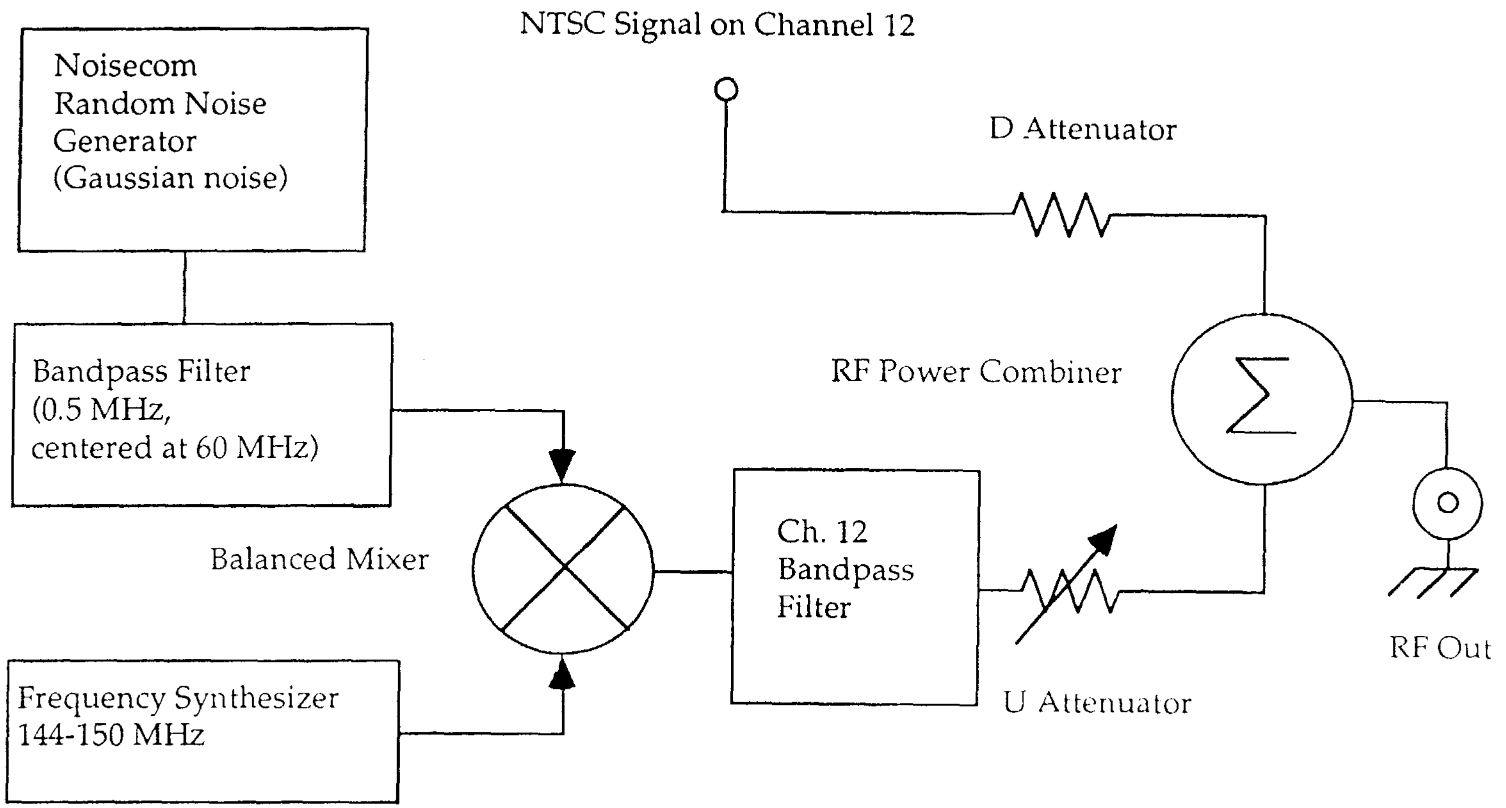

Figure 1: Test Setup for RF Mask Test

Table 1

RF Mask Test Results
at Moderate Desired Power Level (-35 dBm nominal)

ATTC Test #	Center Frequency (MHz)	Undesired Power (dBm)			
		Video			Audio
		TOV*	TOV**	CCIR4**	TOA
296	203.75	-48.06			
297	204.25	-64.57			
298	204.75	-79.44			
299	205.25	-89.23			
300	205.75	-90.42			
301	206.25	-91.99			
302	206.75	-91.16			
303	207.25	-87.88			
304	207.75	-83.08			
305	208.25	-79.30	-79.84	-72.12	
306	208.83	-80.07	-86.22	-73.91	
307	209.41	-71.23	-77.62	-65.95	
308	209.41				-75.10
309	209.75				-82.90
310	210.31				-63.61 †
311	210.81				-43.04

* "Texas Sign Dude" image

** "Woman with Roses" image

† Note: For the single case of Test #310, the data point obtained is inconclusive due to the likely adverse effect of the narrow-band noise filter roll-off characteristic. At the center frequency of 210.31 MHz, the ATV pilot carrier frequency, the filter response is only about 25 dB down at the aural carrier frequency of 209.75 MHz. Therefore, it should not be concluded that the ATV pilot would cause this level of interference to lower-adjacent-channel audio. Since this data point is inconclusive, it should not be used by spectrum planners.

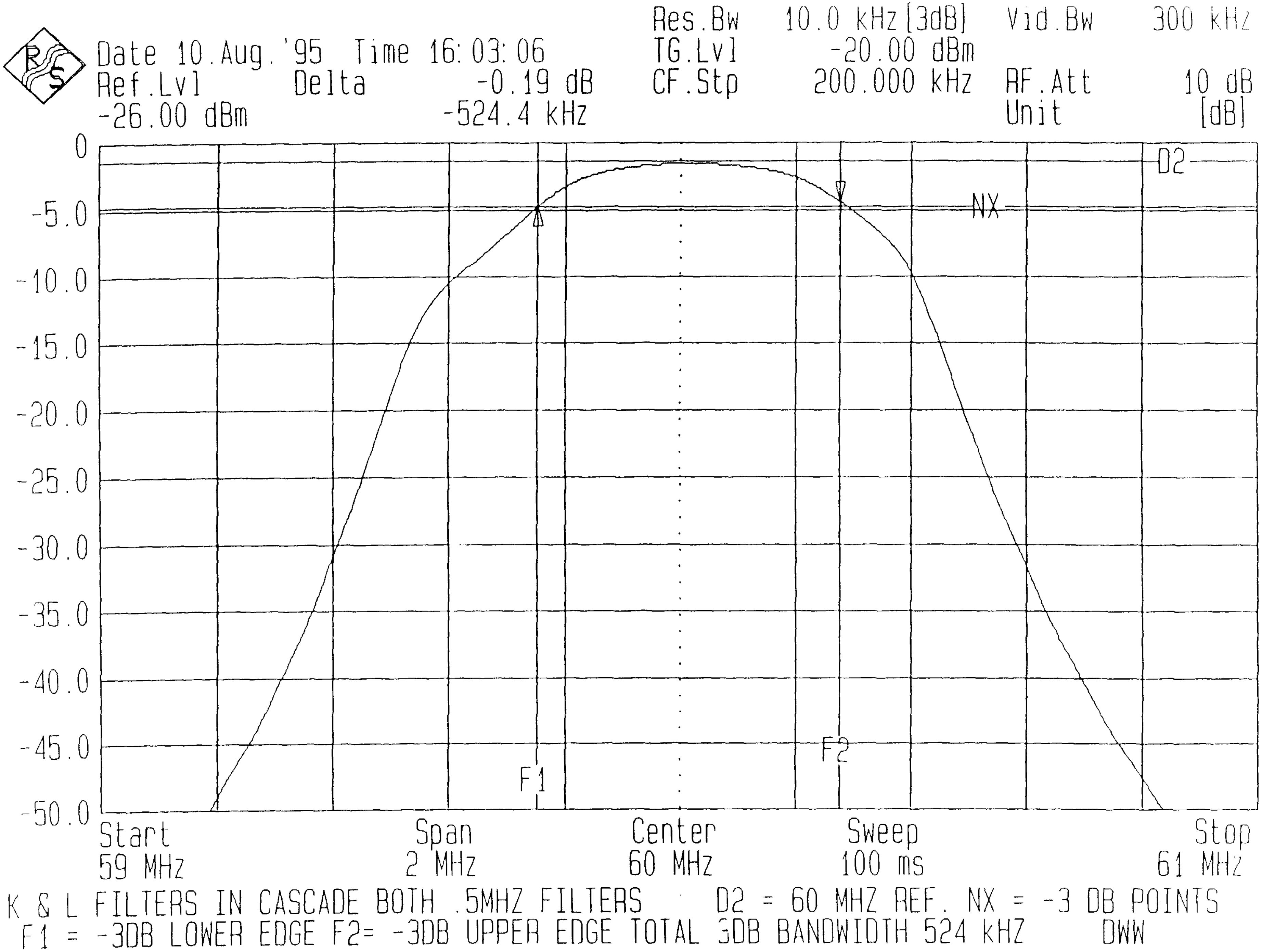
Date 10.Aug.'95 Time 16:03:06
Ref.Lvl Delta -0.19 dB
-26.00 dBm -524.4 kHz
Res.Bw 10.0 kHz [3dB] Vid.Bw 300 kHz
TG.Lvl -20.00 dBm
CF.Stp 200.000 kHz RF.Att 10 dB
Unit [dB]
0
-5.0
-10.0
-15.0
-20.0
-25.0
-30.0
-35.0
-40.0
-45.0
-50.0
D2
NX
F1
F2
Start 59 MHz
Span 2 MHz
Center 60 MHz
Sweep 100 ms
Stop 61 MHz
K & L FILTERS IN CASCADE BOTH .5MHZ FILTERS D2 = 60 MHZ REF. NX = -3 DB POINTS
F1 = -3DB LOWER EDGE F2= -3DB UPPER EDGE TOTAL 3DB BANDWIDTH 524 kHZ DWW

Figure 2

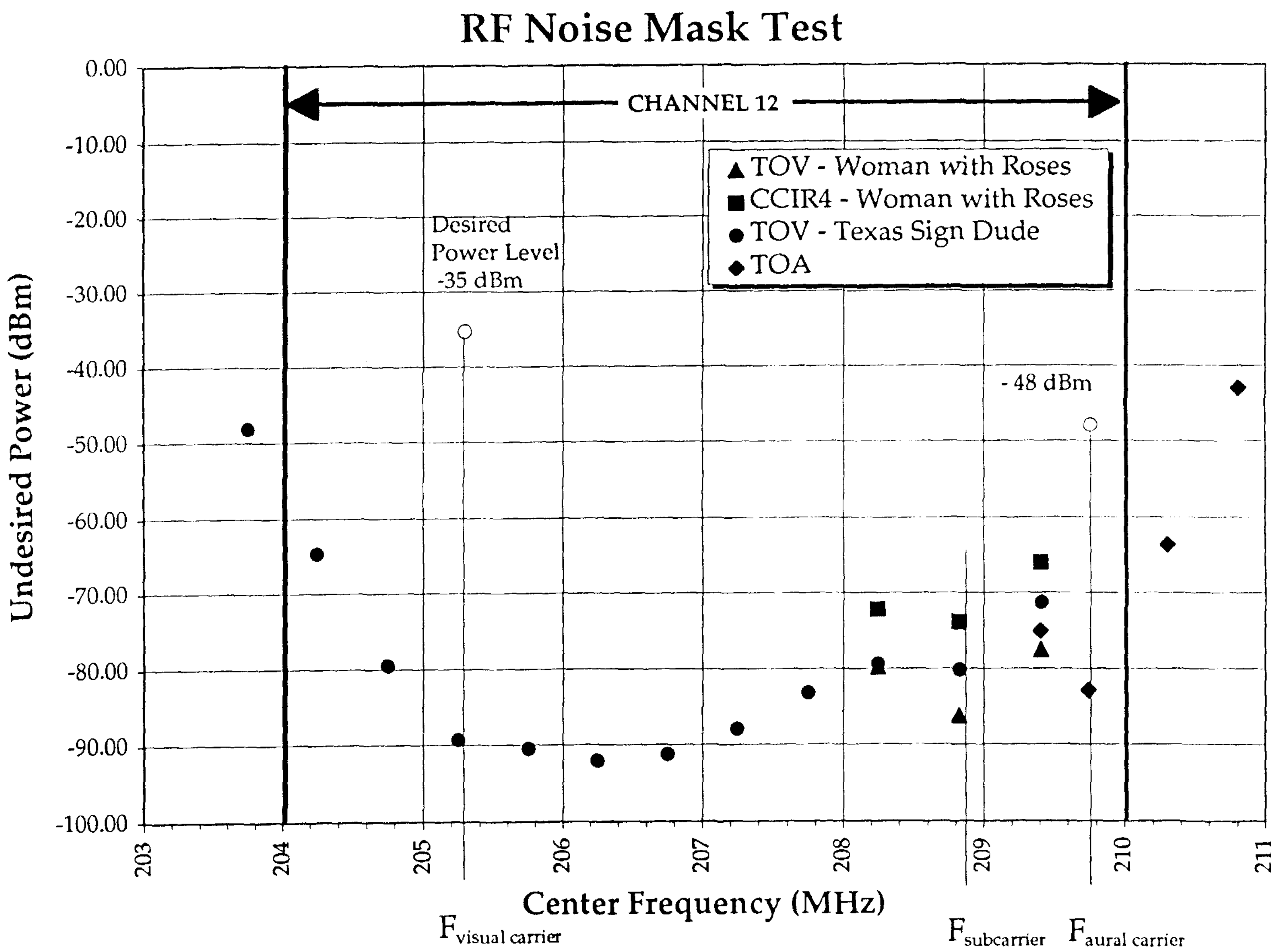
RF Noise Mask Test
CHANNEL 12
TOV - Woman with Roses
CCIR4 - Woman with Roses
TOV - Texas Sign Dude
TOA
Desired Power Level -35 dBm
- 48 dBm
Undesired Power (dBm)
0.00
-10.00
-20.00
-30.00
-40.00
-50.00
-60.00
-70.00
-80.00
-90.00
-100.00
203
204
205
206
207
208
209
210
211
Center Frequency (MHz)
F visual carrier
F subcarrier
F aural carrier

Figure 3

Table 2

ATTC TEST # 57

Random Noise NTSC Calibration
(VHF)

Strong Desired Power Level (-25 dBm nominal)

RECEIVER	Undesired Power Level (dBm) TOV
A1	-74.88
A2	-72.88
A3	-74.88
A4	-74.88
A5	-80.88
A6	-76.88
A7	-76.88
A8	-75.88
B1	-77.88
B2	-77.88
B3	-74.88
B4	-73.88
B5	-77.88
B6	-76.88
B7	-78.88
B8	-77.88
C1	-73.88
C2	-74.88
C3	-76.88
C4	-77.88
C5	-73.88
C6	-79.88
C7	-75.88
C8	-74.88
Median	-76.38

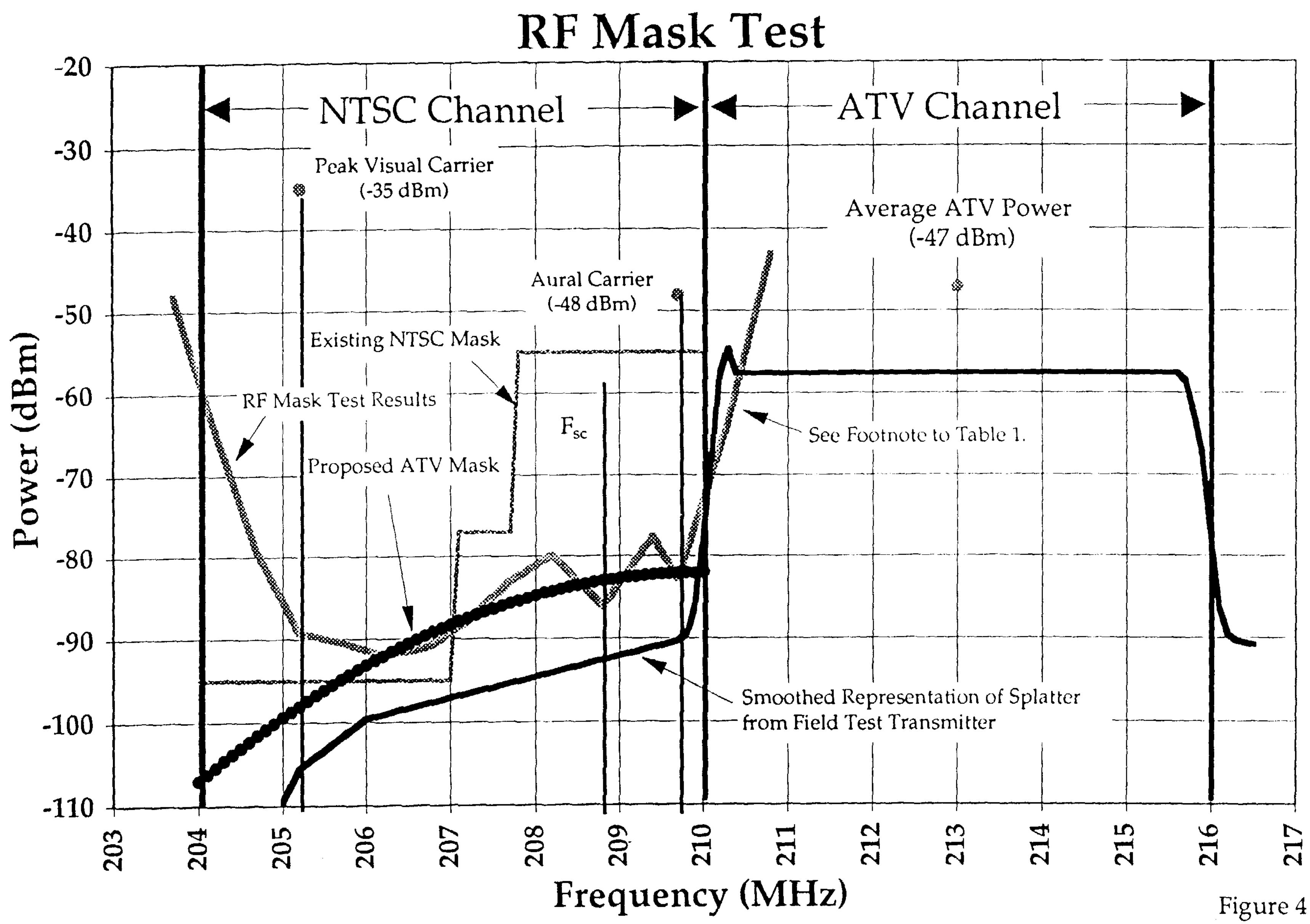
RF Mask Test
NTSC Channel
ATV Channel
Peak Visual Carrier
(-35 dBm)
Average ATV Power
(-47 dBm)
Aural Carrier
(-48 dBm)
Existing NTSC Mask
RF Mask Test Results
F_{sc}
See Footnote to Table 1.
Proposed ATV Mask
Smoothed Representation of Splatter
from Field Test Transmitter
Power (dBm)
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
Frequency (MHz)

Figure 4

Appendix

Test Procedure to Devise an RF Mask for ATV Emissions

SSWP2-1463

ATTC
7/25/95

EXPERIMENTAL PROCEDURE TO DEVISE AN RF MASK FOR ATV EMISSIONS

PS/WP-3 has requested SS/WP-2 to devise a test procedure to determine the spectral noise power density as a function of frequency across an NTSC channel to provide the data upon which an RF mask can be designed which would be used to describe the out-of-channel emission limits for an ATV transmitter.

The experimental procedure is very similar to that used to measure the threshold of visible random noise into NTSC. In this case, the random noise is band limited and the band limited noise heterodyned to the test channel (channel 12) by means of a frequency synthesizer. The frequency of the synthesizer is varied during the experiment so that the narrow-band noise appears at different frequencies and observers establish the Threshold of Visibility (TOV) of the narrow-band noise at each frequency.

The experimental set-up is shown in Figure 1. The Gaussian noise from the Noisecom generator is filtered by means of a 60 MHz bandpass filter whose frequency response is shown in Figure 2. The filtered noise (centered at 60 MHz) is heterodyned to the test frequency by the synthesizer. As channel 12 extends from 204 to 210 MHz the lowest frequency is 144 MHz and the highest is 151 MHz (which extends the testing into the upper adjacent channel by 1 MHz). The frequency increments are 0.5 MHz.

To facilitate detecting the threshold U level, the interfering narrow-band noise is gated on-off, on-off, continuously, at a 1 Hz rate. The expert viewer(s) will note the TOV on each receiver and when this is found at a given frequency, the noise spectrum is shifted to the next of the 15 test frequencies.

The Desired NTSC level must be chosen experimentally to be above the noise level of the receivers, but it must not be so high that the available narrow band noise power is below TOV at or near the edge(s) of the test channel where NTSC receivers are relatively insensitive. Therefore, the maximum available U power will first be asserted to the receivers under test with the synthesizer frequency set to 144 MHz (lower limit of channel 12). The Desired signal level will be decreased from maximum available until all 24 receivers evidence visible interference. Then the U signal will be switched off, and the 24 receivers examined for visibility of noise. They should not show noise on a flat grey field of 50 IRE.

Since this test was first proposed by PS/WP-3, a need to extend this test to determine the noise floor near the aural carrier frequency of the NTSC signal has been expressed. This frequency is 209.750 MHz in the test channel. Such testing should also employ noise occupying 0.5 MHz. There is a need to explore a range of frequencies from at least 0.250 MHz below the aural carrier of channel 12 to at least 1 MHz above this frequency into the upper adjacent channel. One test frequency must be centered 4.50 MHz above the visual carrier.

When this is done, it will be possible to construct plots of the relative video sensitivity to such noise as a function of frequency across an NTSC channel. Data for all 24 NTSC receivers being plotted as a scatter plot. Sensitivity to aural impairment of the 24 receivers will be plotted separately, with stereo, mono and SAP so indicated.

In addition, the threshold of visibility for random noise whose spectrum is substantially flat across the test channel will be measured and reported for each receiver.

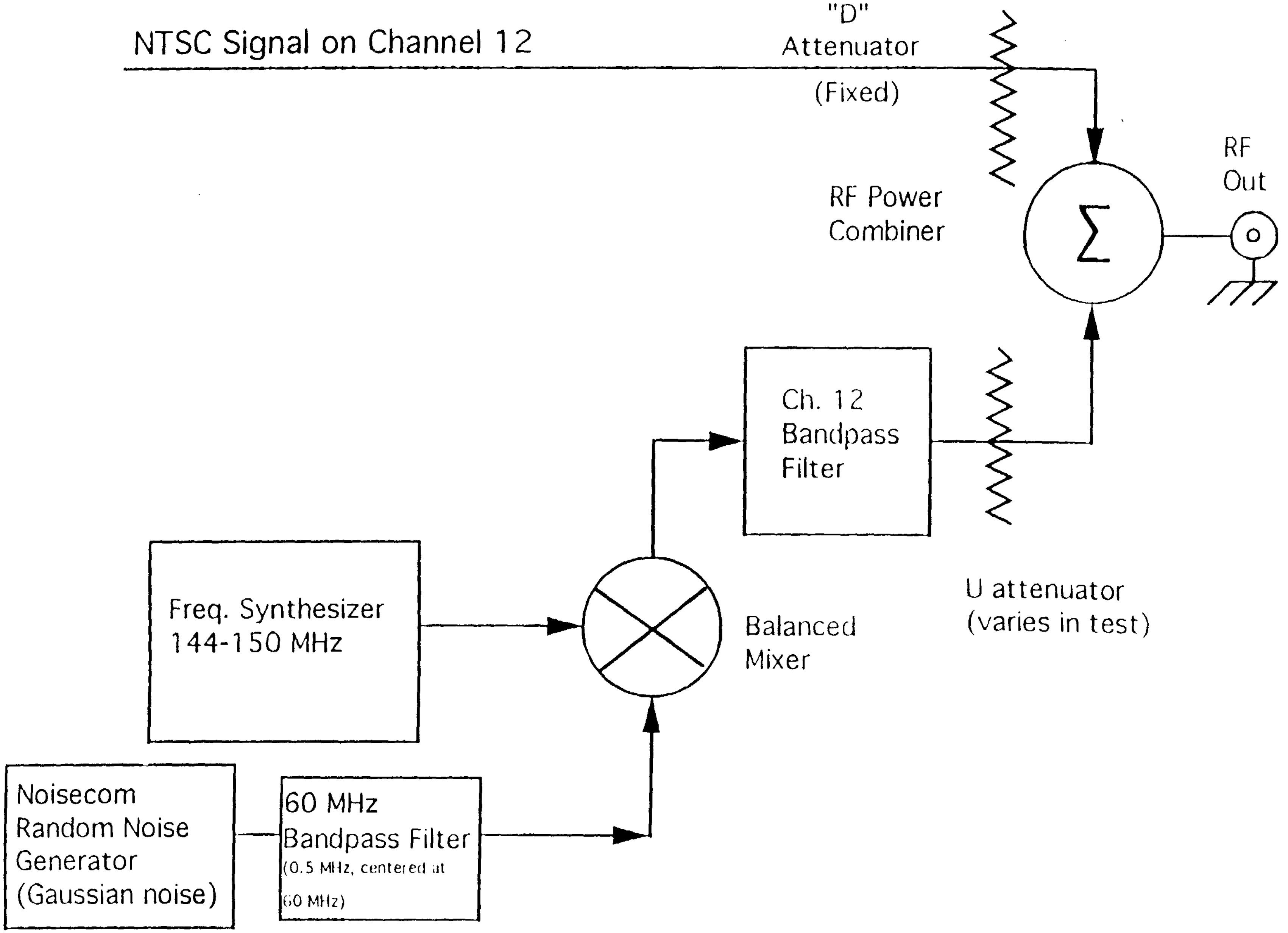

Figure 1: Test Setup for RF Test Bed

ATTC
7/95

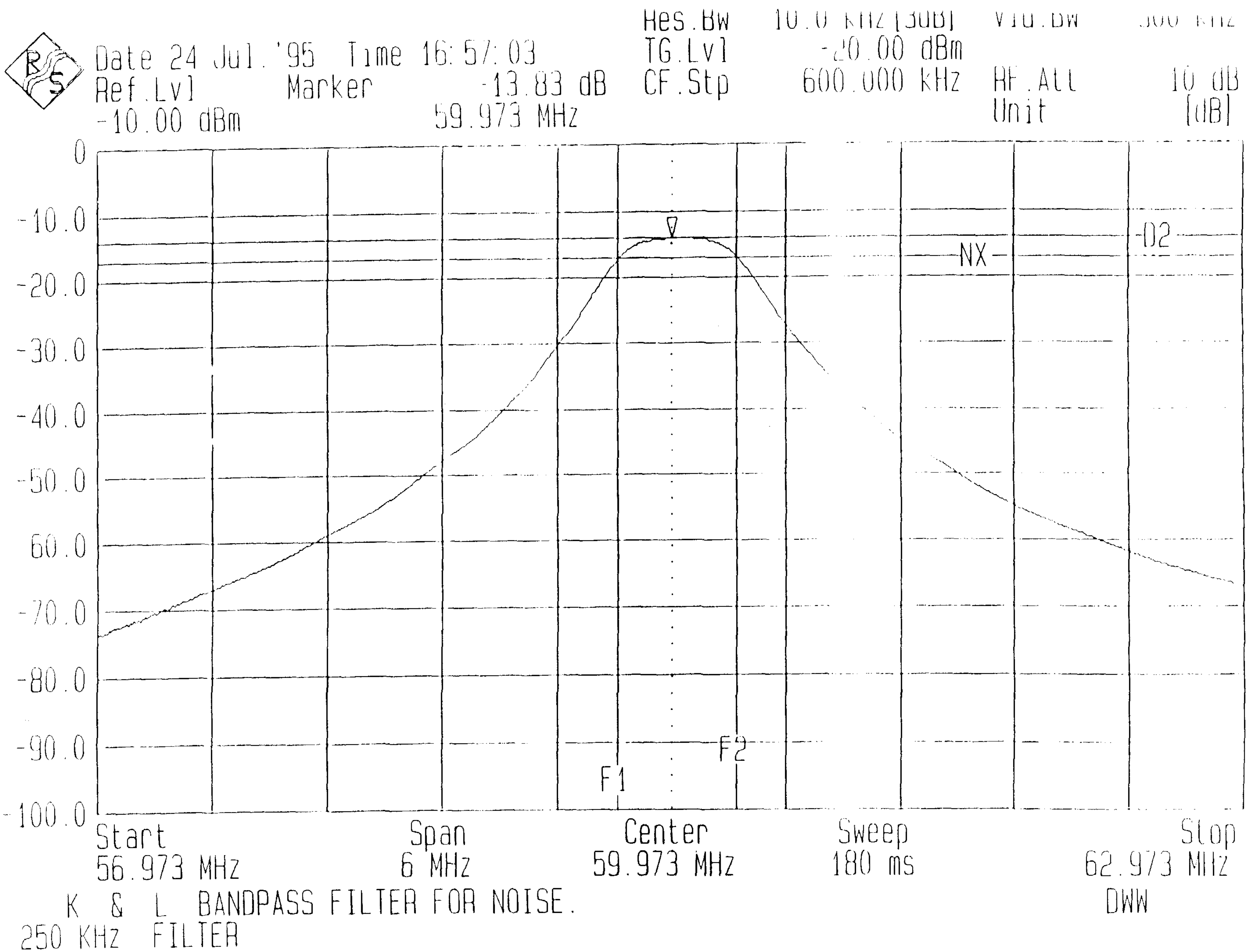

Figure 2: Noise Bandpass Filter for RF Mask Experiment at ATTC

ATTC
7/25/95

Receiver-by-receiver Voting Tabulations

Appendix to RF Mask Test Results

Receiver-by-receiver voting tabulations
at Moderate (-35 dBm nominal) Desired Power Level

ATTC TEST # 296
203.75 MHz

RECEIVER	Undesired Power Level (dBm)			
	TOV ("Texas Sign Dude")			
	RUN #1	RUN #2	RUN #3	AVG.
A1	-48.06	-49.06		-48.56
A2	-47.06	-47.06		-47.06
A3	-48.06	-48.06		-48.06
A4	-47.06	-49.06		-48.06
A5	-48.06	-48.06		-48.06
A6	-50.06	-50.06		-50.06
A7	-47.06	-49.06		-48.06
A8	-47.06	-46.06		-46.56
B1	-49.06	-48.06		-48.56
B2	-50.06	-52.06		-51.06
B3	-48.06	-46.06		-47.06
B4	-48.06	-51.06		-49.56
B5	-51.06	-51.06		-51.06
B6	-51.06	-50.06		-50.56
B7	-48.06	-50.06		-49.06
B8	-50.06	-49.06		-49.56
C1	-41.06	-44.06		-42.56
C2	-43.06	-49.06		-46.06
C3	-42.06	-49.06		-45.56
C4	-46.06	-52.06		-49.06
C5	-46.06	-47.06		-46.56
C6	-46.06	-52.06		-49.06
C7	-41.06	-44.06		-42.56
C8	-45.06	-48.06		-46.56
Median				-48.06

ATTC TEST # 297
204.25 MHz

RECEIVER	Undesired Power Level (dBm)			
	TOV ("Texas Sign Dude")			
	RUN #1	RUN #2	RUN #3	AVG.
A1	-68.07	-70.07	-71.07	-69.74
A2	-64.07	-59.07	-61.07	-61.40
A3	-66.07	-66.07	-69.07	-67.07
A4	-65.07	-63.07	-67.07	-65.07
A5	-65.07	-61.07	-67.07	-64.40
A6	-62.07	-59.07	-68.07	-63.07
A7	-64.07	-65.07	-67.07	-65.40
A8	-69.07	-71.07	-73.07	-71.07
B1	-70.07	-69.07	-64.07	-67.74
B2	-69.07	-65.07	-62.07	-65.40
B3	-66.07	-66.07	-62.07	-64.74
B4	-64.07	-65.07	-55.07	-61.40
B5	-58.07	-63.07	-60.07	-60.40
B6	-59.07	-65.07	-59.07	-61.07
B7	-50.07	-63.07	-50.07	-54.40
B8	-71.07	-71.07	-66.07	-69.40
C1	-55.07	-58.07	-61.07	-58.07
C2	-71.07	-69.07	-69.07	-69.74
C3	-54.07	-61.07	-61.07	-58.74
C4	-59.07	-63.07	-59.07	-60.40
C5	-70.07	-69.07	-70.07	-69.74
C6	-69.07	-64.07	-59.07	-64.07
C7	-66.07	-62.07	-62.07	-63.40
C8	-68.07	-62.07	-65.07	-65.07
Median				-64.57

Note: Test #296 was terminated after the second run. Expert observers determined that they could not complete this test because of inability to adequately differentiate impairment from noise.

ATTC TEST # 298
204.75 MHz

RECEIVER	Undesired Power Level (dBm)			
	TOV ("Texas Sign Dude")			
	RUN #1	RUN #2	RUN #3	AVG.
A1	-81.94	-78.94	-81.94	-80.94
A2	-78.94	-76.94	-77.94	-77.94
A3	-79.94	-79.94	-81.94	-80.61
A4	-78.94	-79.94	-78.94	-79.27
A5	-79.94	-77.94	-77.94	-78.61
A6	-79.94	-76.94	-78.94	-78.61
A7	-80.94	-80.94	-77.94	-79.94
A8	-80.94	-81.94	-80.94	-81.27
B1	-82.94	-82.94	-81.94	-82.61
B2	-80.94	-79.94	-79.94	-80.27
B3	-79.94	-78.94	-78.94	-79.27
B4	-78.94	-79.94	-79.94	-79.61
B5	-78.94	-80.94	-80.94	-80.27
B6	-77.94	-79.94	-78.94	-78.94
B7	-77.94	-81.94	-77.94	-79.27
B8	-78.94	-79.94	-79.94	-79.61
C1	-77.94	-75.94	-77.94	-77.27
C2	-80.94	-82.94	-81.94	-81.94
C3	-79.94	-78.94	-79.94	-79.61
C4	-79.94	-77.94	-77.94	-78.61
C5	-80.94	-80.94	-80.94	-80.94
C6	-79.94	-79.94	-77.94	-79.27
C7	-77.94	-77.94	-76.94	-77.61
C8	-78.94	-75.94	-77.94	-77.61
Median				-79.44

ATTC TEST # 299
205.25 MHz

RECEIVER	Undesired Power Level (dBm)			
	TOV ("Texas Sign Dude")			
	RUN #1	RUN #2	RUN #3	AVG.
A1	-92.90	-88.90	-85.90	-89.23
A2	-91.90	-90.90	-85.90	-89.57
A3	-90.90	-88.90	-88.90	-89.57
A4	-90.90	-88.90	-88.90	-89.57
A5	-88.90	-85.90	-87.90	-87.57
A6	-88.90	-85.90	-86.90	-87.23
A7	-88.90	-89.90	-88.90	-89.23
A8	-90.90	-90.90	-86.90	-89.57
B1	-90.90	-88.90	-89.90	-89.90
B2	-89.90	-87.90	-90.90	-89.57
B3	-87.90	-89.90	-88.90	-88.90
B4	-89.90	-88.90	-88.90	-89.23
B5	-92.90	-88.90	-89.90	-90.57
B6	-91.90	-89.90	-88.90	-90.23
B7	-87.90	-86.90	-89.90	-88.23
B8	-88.90	-88.90	-88.90	-88.90
C1	-86.90	-88.90	-87.90	-87.90
C2	-88.90	-88.90	-88.90	-88.90
C3	-87.90	-88.90	-89.90	-88.90
C4	-87.90	-87.90	-87.90	-87.90
C5	-88.90	-89.90	-86.90	-88.57
C6	-86.90	-86.90	-87.90	-87.23
C7	-88.90	-89.90	-88.90	-89.23
C8	-88.90	-88.90	-89.90	-89.23
Median				-89.23

ATTC TEST # 300
205.75 MHz

RECEIVER	Undesired Power Level (dBm) TOV ("Texas Sign Dude")			
	RUN #1	RUN #2	RUN #3	AVG.
A1	-92.92	-90.92	-89.92	-91.25
A2	-89.92	-88.92	-88.92	-89.25
A3	-91.92	-90.92	-90.92	-91.25
A4	-89.92	-91.92	-91.92	-91.25
A5	-89.92	-90.92	-88.92	-89.92
A6	-89.92	-91.92	-90.92	-90.92
A7	-89.92	-89.92	-89.92	-89.92
A8	-89.92	-89.92	-88.92	-89.59
B1	-90.92	-91.92	-89.92	-90.92
B2	-88.92	-90.92	-88.92	-89.59
B3	-90.92	-90.92	-88.92	-90.25
B4	-90.92	-89.92	-88.92	-89.92
B5	-92.92	-89.92	-91.92	-91.59
B6	-89.92	-90.92	-89.92	-90.25
B7	-87.92	-90.92	-91.92	-90.25
B8	-91.92	-89.92	-89.92	-90.59
C1	-90.92	-90.92	-90.92	-90.92
C2	-90.92	-88.92	-87.92	-89.25
C3	-89.92	-93.92	-89.92	-91.25
C4	-88.92	-89.92	-90.92	-89.92
C5	-88.92	-89.92	-86.92	-88.59
C6	-90.92	-91.92	-91.92	-91.59
C7	-90.92	-90.92	-89.92	-90.59
C8	-88.92	-90.92	-91.92	-90.59
Median				-90.42

ATTC TEST # 301
206.25 MHz

RECEIVER	Undesired Power Level (dBm) TOV ("Texas Sign Dude")			
	RUN #1	RUN #2	RUN #3	AVG.
A1	-92.99	-92.99	-90.99	-92.32
A2	-88.99	-88.99	-84.99	-87.66
A3	-92.99	-92.99	-91.99	-92.66
A4	-94.99	-91.99	-90.99	-92.66
A5	-93.99	-93.99	-88.99	-92.32
A6	-89.99	-95.99	-89.99	-91.99
A7	-92.99	-89.99	-89.99	-90.99
A8	-88.99	-88.99	-86.99	-88.32
B1	-93.99	-90.99	-87.99	-90.99
B2	-91.99	-90.99	-90.99	-91.32
B3	-89.99	-88.99	-88.99	-89.32
B4	-88.99	-87.99	-89.99	-88.99
B5	-92.99	-91.99	-91.99	-92.32
B6	-93.99	-91.99	-92.99	-92.99
B7	-95.99	-89.99	-93.99	-93.32
B8	-92.99	-91.99	-93.99	-92.99
C1	-88.99	-89.99	-90.99	-89.99
C2	-90.99	-91.99	-90.99	-91.32
C3	-91.99	-92.99	-92.99	-92.66
C4	-89.99	-91.99	-89.99	-90.66
C5	-87.99	-87.99	-90.99	-88.99
C6	-91.99	-95.99	-95.99	-94.66
C7	-91.99	-93.99	-93.99	-93.32
C8	-91.99	-90.99	-92.99	-91.99
Median				-91.99